

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2005/007280

International filing date (day/month/year)
08.04.2005

Priority date (day/month/year)
14.04.2004

International Patent Classification (IPC) or both national classification and IPC
H04L12/28

Applicant
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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/007280

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	7-9
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	7-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
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AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/JP2005/007280

**Concerning section I,
Basis of the report**

1. The following documents are referred to in this communication:

D1: US 2004/0009769 A1

D2: US 2004/0063458 A1

D3: US 2003/0142652 A1

D4: US 2003/0065952 A1

**Concerning Section V,
Reasoned statement with regard to novelty, inventive step or industrial applicability**

1. **Technical field**

The present invention relates to a communication control method (**claim 1**) for controlling communication between wireless communication apparatuses that are capable to communicate wirelessly in a first communication mode in which communication is performed via a base station (eg. "infrastructure mode") and in a second communication mode in which communication is performed directly (eg. "ad-hoc mode"), and to a corresponding apparatus (**claim 2**).

- 1.1 **State of the art**

Wireless communication apparatuses which are capable of communicating in an ad-hoc mode and in an infrastructure mode are well known in the art.

Document **D2**, which is regarded as the closest available prior art, discloses a method for automatically switching the operation of a wireless communication apparatus between said infrastructure and said ad-hoc mode.

According to the disclosure of D2, when an access point detects a packet transmitted from said wireless communication apparatus towards a second apparatus which is also capable of performing communication in an ad-hoc mode, the access point

automatically searches for available channels in the ad-hoc network and communicates this information to the wireless communication apparatus, so that it can initiate a communication towards said second apparatus in said ad-hoc mode. Document **D3** also discloses another similar method for switching the operations of a wireless communication apparatus from an infrastructure to an ad-hoc mode.

1.2 The technical problem

Although the method disclosed in the closest prior art allows a switching from an infrastructure and an ad.-hoc mode with the allocation of relevant physical network resources, there is no possibility to verify if there is software and function compatibility among the two apparatuses which are thus put in communication in said ad-hoc mode. Furthermore the wireless apparatus has no possibility to decide the desired communication mode according to the desired services and functionalities to be exchanged with said second communication apparatus.

The technical problem may be thus formulated as to allow a more flexible decision about whether switching the communication mode to be employed in communication by said wireless communication apparatus with said second apparatus.

1.3 The invention

According to the present invention, **(i)** a connection is established between said first and second wireless communication apparatus in the first communication mode ("the infrastructure mode"), and **(ii)** information is exchanged between the two apparatuses in order to determine whether the first wireless communication apparatus possesses a specific function.

If it is the case, **(iii)** the communication mode is switched to the second communication mode ("the ad-hoc mode").

This solution allows to perform an intelligent switching between said two communication modes in accordance to a specific function determination process between said two communication apparatuses.

This solution to the above discussed technical problem is neither disclosed nor rendered obvious in any of the cited prior art documents.

Documents D2 and D3 conversely disclose alternative switching techniques which do not provide the features of the present invention.

Consequently, the subject-matter of the independent **claims 1 and 2** is considered to be novel, inventive and industrially applicable according to Articles 33(2), (3) and (4) PCT.

- 1.4 The same applies to the dependent claims 3 to 6 which relate to further implementing details of the apparatus and method of the independent claims and therefore equally meet these requirements of the PCT.
- 2 Conversely, regarding **claim 7**, document D1 discloses a wireless communication apparatus capable of wirelessly communicating with a wireless communication apparatus directly, comprising (i) transmitting means for transmitting a signal, which gives notification of existence of this apparatus, to another wireless communication apparatus, (see D1, abstract; "S601" in figure 6 and paragraphs [0013] and [0040]), (ii) determining means for executing processing which is for determining a function which is executable with said other wireless communication apparatus, if a connection to said other wireless communication apparatus has been made in response to the signal (see D1, "S612" and "S613" in figure 6 and paragraph [0030]) and (iii) data transmitting means for transmitting data to said other wireless communication apparatus in accordance with the determination made by said determination means (see D1, "S614" in figure 6 and paragraph [0069]).

The subject-matter of claim 7 therefore lacks novelty in the sense of Article 33(2) PCT.

Furthermore, it appears that the subject-matter of claim 7 lacks novelty also in view of the disclosure of document **D4** (see D4, abstract; paragraphs [0011] to [0016] and claim 1) which discloses a similar apparatus as the one disclosed in D1.

- 2.1 **Dependent claims 8 and 9** do not contain any features which, in combination with the features of claim 7 to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, as the subject-matter of said claims is **either**

disclosed in documents D1-D4 (**for claim 9**: see D4, paragraph [0040]; figures 3(a) to 3(c)) or represents simple design details which are generally known to the man skilled in the art of wireless communication devices and related communication mode switching techniques.

3 **Remarks concerning clarity and formal defects in the international application:**

- The independent **claim 7** does not meet the requirements of Article 6 PCT, because it does not contain all the features which are essential to the definition of the invention. Contrary to the other independent claims, said claim fails to disclose an apparatus which can be operated in a first and a second communication mode but merely refers to said second communication mode and it fails to specify all the features disclosed in the corresponding method claim 1 and discussed also on paragraph 1.3 above, contrary also to the description (see page 7, line 13 to page 8, line 18).
- Contrary to the requirements of Rule 5.1 (a), (ii) PCT, the relevant background art disclosed in document D1-D4 is not mentioned in the description, nor are these documents identified therein.
- Contrary to the requirements of Rule 6.2 b) PCT the features cited in the independent claims are not provided with reference signs in parentheses to increase the intelligibility of the claims.
- Independent **claims 1, 2 and 7** are not in the **two-part form** in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- The vague and imprecise statement in the description on page 35, lines 21 to 23 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them.

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